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SECTION VII.—WEATHER AND DATA FOR THE MONTH.**THE WEATHER OF THE MONTH.**

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PRESSURE.

The distribution of the mean atmospheric pressure over the United States and Canada, and the prevailing direction of the winds are graphically shown on Chart VII, while the average values for the month at the several stations, with the departures from the normal, are shown in Tables I and III.

For the month as a whole, the mean barometric pressure was above the normal in the Pacific Coast States, Idaho, and the western portion of Montana, but for all other sections it was below the normal. The positive departures were generally small, the greatest values appearing in northern California and southwestern Oregon. Likewise the negative departures were not marked, they being greatest in the Canadian Provinces, east of the Rocky Mountains, and in Michigan, Minnesota, and portions of the Dakotas.

The month opened with relatively low pressure over the Lake region, in southern Texas, the extreme northern Rocky Mountain region, and the Pacific Coast States. Elsewhere it was near or somewhat above the normal. During the next few days the pressure was generally high, except that a low area moved from Texas northeasterly across the country and down the St. Lawrence Valley. During the next week a succession of rather extensive low-pressure areas moved easterly from the far northwest, causing relatively low pressure throughout most of the northern border States and the Canadian Provinces, while in the southern half of the country the pressure was relatively high most of the time. However, about the 12th of the month the conditions in the north were replaced by a rather extensive high-pressure area which continued for several days, and, at the same time, a low-pressure area of considerable magnitude moved slowly across central and eastern districts from the far southwest. During the latter half of the month a succession of rather extensive low and high pressure areas followed one another somewhat slowly across the country.

The month closed with relatively low pressure along the Atlantic and Gulf seaboard and over the Great Plains, Rocky Mountain, and Plateau regions, while high pressure prevailed over the Lake region, but elsewhere pressure was near the normal.

The distribution of highs and lows was favorable for southerly and southwesterly winds in New England, and the coastal portions of the Middle and South Atlantic States, except Florida, and over the western Gulf States, and most of the Great Central valleys. It was favorable for westerly and northwesterly winds in the lower Lake region, the upper Missouri Valley, and over much of the Pacific Coast States, while elsewhere variable winds prevailed.

TEMPERATURE.

During the first few days of the month cold weather with heavy to killing frosts occurred from western Ne-

braska northward over the Dakotas and in the western portions of Minnesota and Iowa. This area of cold weather spread across the central valleys and reached the Atlantic coast by the 4th, but in the meantime it had turned warmer over the Great Plains, and by the 6th warmer weather prevailed over most of the central regions, with temperatures above 80° in Montana and above 90° in western Nebraska and Kansas.

An area of colder weather overspread the Pacific Coast States on the 7th, when in parts of California the lowest temperature on record for May occurred. The temperature was moderately high in central districts on the 7th, and in the eastern sections on the 8th; but the area of colder weather from the Pacific coast overspread the northern Rocky Mountain States, and on the 8th heavy to killing frosts occurred in Montana and Wyoming, and light frosts in western Nebraska. On the 9th mostly fair and colder weather prevailed in the central valleys.

During the first nine days of the month there was a large deficiency in temperature over most of the country, especially in the extreme northern portions and in most of the Rocky Mountain and Great Basin States, where frosts and freezing temperatures were frequent.

About the beginning of the second decade fair and cool weather overspread the central and eastern parts of the country, when light frost occurred in southern and killing frost in northern New England. At the same time there was warmer weather over the Rocky Mountains, but another area of much lower temperature covered the Pacific Coast States and Plateau region. During the next few days this area of cold weather moved across the central and northern parts of the country, accompanied by heavy to killing frosts in the interior of Oregon and Washington, the northern Rocky Mountain States and to the eastward. The somewhat warmer weather which followed was quickly replaced by another area of cold accompanied by general frosts and freezing temperatures over the Rocky Mountain and portions of the Plains States.

About the 16th unseasonably low temperatures prevailed in the lower Lake region and Ohio Valley and eastward to the Atlantic coast, and during the next few days cool weather and frosts were general over the Northwest, extending southward to central Nebraska and Kansas. This cold area spread eastward, reaching the Atlantic coast about the 20th, with general frosts in the upper Lake region, the Ohio Valley, and central Appalachian Mountain region as far south as West Virginia and Kentucky.

The last decade of the month opened with cold weather in the far Northwest and western Plateau district, with temperatures below freezing in Nevada and light frosts in parts of California. There was a general rise in temperature as the decade progressed in most central and eastern districts, but over the Rocky Mountain and Plateau States it continued low, and frosts and freezing weather were general. The temperature during the last week of the month was considerably above the normal in most central and eastern parts of the country, but it continued much below normal in the Rocky Mountain,

Plateau, and Pacific Coast States. Temperature was below freezing in portions of the Plateau and Rocky Mountain regions, 20° being recorded at Flagstaff, Ariz., on the 26th, while 90° or above occurred in most of the central and southern parts of the country, and in a few of the Southern States the previous maximum for May was equaled.

For the month as a whole the mean temperature was above the normal in all sections south of northern Massachusetts and northern Pennsylvania and from the lower Lake region southwesterly to southern New Mexico, except over the southern half of the Florida Peninsula, and locally in Texas, Ohio, and Indiana; elsewhere it was below the normal.

RAINFALL.

The month opened with rain in the central parts of the country, and during the next few days precipitation occurred from Texas and the lower Mississippi Valley northeastward to the Great Lakes. The rainfall was heavy in the lower Mississippi Valley and excessive in parts of Louisiana and Mississippi. Fair weather prevailed over most of the country on the 5th, but on the 6th rain fell on the north Pacific coast and from the Lake region and Ohio Valley eastward, with fair weather in practically all the Central and Southern States. Showers occurred on the 9th in the Northeastern States, on the Pacific coast, and in extreme southern Georgia and northern Florida.

About the beginning of the second decade scattered showers occurred in the northern part of the country, and general rains fell from Wyoming eastward to the Ohio Valley, with light showers over most of Florida, relieving the drought in the central and southern counties of that State.

About the middle of the month general and widespread rain fell in much of the central and northern parts of the country, and rain continued in central and northern Florida, extending northward along the Atlantic coast. The amounts were heaviest in the lower Missouri and the central and eastern Mississippi Valleys, but practically none had fallen throughout all the southern portions of the Rocky Mountain and Plateau regions and over much of the Pacific Coast States.

Near the close of the second decade general rains occurred in the Gulf States, Oklahoma, and Kansas, while light, scattered falls were reported from north-central California and to the northward over Oregon and Washington.

The precipitation for the seven-day period ending May 23 was very unevenly distributed. It was excessive in some parts of Texas and in the lower Mississippi Valley, and damaging local rains occurred in New York and New England, while general rains fell over the corn and wheat States and also the greater part of the cotton region. Light, scattered showers occurred in parts of California and in extreme southern Texas, and the drought was checked in most of the Southeast by general rains.

The last week of the month opened with general rains along the Atlantic coast from Florida to southern New England, the falls being heavy in parts of the Carolinas. Rain was reported also in scattered areas of limited extent in the corn and wheat regions, as well as over the northern Rocky Mountain district. During the next few days scattered rains occurred in the Northwestern States, some of the precipitation in the Rocky Mountains coming in the form of snow. However, in the southern part of the country there was very little

rainfall until after the middle of the week, and then it was confined largely to the eastern Gulf States, Oklahoma, and Arkansas. During the last few days of the month general showers occurred in Florida and in the lower Missouri and central Mississippi Valleys, and from northern Alabama northeastward over the Ohio Valley, the Lake region, and the Northeast, the falls being heavy in parts of Tennessee. The heaviest rain during this period occurred in central Missouri, where over 4 inches fell, but it was moderate to heavy in nearly all the central parts of the country, as well as in central Montana. Little or no rain fell in the coastal portion of the west Gulf States, the southern portions of the Rocky Mountain and Plateau regions, and the Pacific Coast States. Some damage was done by local storms in the northern part of the country.

For the month, as a whole, the rainfall was heavy in Mississippi, Louisiana, and eastern Texas, in portions of Kansas, Iowa, Missouri, and Illinois, and over small areas in Tennessee, North Carolina, Virginia, Maine, Minnesota, and South Dakota. Elsewhere it was moderate to light, except in extreme southwest Texas and the southern portions of Arizona and California, where little or no rain fell.

GENERAL SUMMARY.

For the month, as a whole, the weather was generally favorable for the growth of vegetation and the advancement of field crops in practically all central and most eastern districts. In the Northeast and North Central States, Rocky Mountain, Plateau, and Pacific coast districts crops were retarded by the cold weather, while in some southern and southeastern sections it was too dry for best results.

Corn planting, its germination and growth were retarded by dry weather in southeastern States and wet and cold conditions in the northern districts during much of the month. However, during the last week there was a decided improvement in nearly all parts of the country. The weather was generally favorable for the growth and development of winter wheat, except that it was too dry in parts of the Southeast and Southwest, and some damage resulted from frost and cold in the Rocky Mountain and Plateau districts and north Pacific States. Spring wheat progressed favorably, although growth was somewhat retarded by the cold weather.

Much cotton seed failed to germinate well, and a generally poor stand was reported in the early part of the month because of the cold and dry weather. However, the warm weather and rains later in the month had a very favorable effect, and there was a decided improvement and rapid development of the crop. Truck crops generally made favorable progress, except somewhat damaged by drought in the Southeast and by frosts and unseasonably cold weather from the Rocky Mountain States westward.

The condition of fruits was generally favorable, except some damage resulted from the cold weather and frost in portions of the Rocky Mountain and Plateau districts, the damage being rather extensive in parts of Idaho and Utah.

LOCAL STORMS.

The following notes on severe storms have been extracted from reports of Weather Bureau officials:

Texas.—A thunderstorm visited Dallas and Kaufman Counties during the evening of May 15, 1916, the wind

reaching a velocity of 40 miles an hour about 9:30 p. m., with an unusually heavy downpour of hail from 9:31 to 9:36 p. m., covering the ground like a blanket of snow. Some of the hailstones were from one-half to 1 inch in diameter. In places corn and vegetation were stripped of blades and leaves, cotton was beaten into the ground, and fruit and other trees damaged. One person was killed by lightning near Terrell, Tex., and crops and property damage was estimated at over \$50,000.

Alabama.—A severe storm occurred shortly after midnight of May 21–22, 1916, about 6 miles southwest of Birmingham, Ala. Several mining camps with the homes of the employees were in the direct path of the storm, which was about 500 feet wide and a mile in length. The first damage was the blowing over of three steel towers bearing high-tension wires. At one of the camps (Spring Gap) one house was destroyed and its three occupants (a woman and two children) were killed. Several other houses were blown so that they leaned from 15 to 20° in a northwesterly direction, but retained their foundation positions. Boards, pieces of tin, and other loose material were carried several hundred yards to the northwest, and many trees were blown over, about half the latter being snapped off a few feet above the ground. Besides the three people killed several were injured, one severely. Property loss was about \$15,000.

South Carolina.—A severe storm visited Charleston, S. C., on the afternoon of May 30, 1916. All wreckage fell in one direction, which indicates it was not a tornado. The storm traveled from west to east, and was about 150 yards wide and less than one-half mile in length. The property damage was slight, being confined principally to the demolition of some advertising signs, the blowing over of a few chimneys, and wrecking a portion of the roof of the Union Station. One man was struck and killed by an advertising sign behind which he had apparently taken refuge, and a boy was seriously injured in the same way.

Average accumulated departures for May, 1916.

| Districts. | Temperature. | | | Precipitation. | | | Cloudiness. | | Relative humidity. | |
|--------------------------------|-------------------------------------|----------------------------------|-------------------------------------|-------------------------------------|----------------------------------|-------------------------------------|-------------------------------------|----------------------------|-------------------------------------|----------------------------|
| | General mean for the current month. | Departure for the current month. | Accumulated departure since Jan. 1. | General mean for the current month. | Departure for the current month. | Accumulated departure since Jan. 1. | General mean for the current month. | Departure from the normal. | General mean for the current month. | Departure from the normal. |
| | ° F. | ° F. | ° F. | Ins. | Ins. | Ins. | 0–10 | | Per cent | |
| New England..... | 54.4 | -0.1 | -4.4 | 3.69 | +0.30 | -2.20 | 6.3 | +0.8 | 74 | -4 |
| Middle Atlantic..... | 63.6 | +8.0 | +7.9 | 3.40 | -0.10 | -1.50 | 5.4 | +0.4 | 65 | -7 |
| South Atlantic..... | 72.8 | +3.0 | +9.6 | 2.48 | -1.30 | -8.60 | 4.2 | -0.3 | 68 | -6 |
| Florida Peninsula..... | 77.0 | -0.2 | -1.3 | 3.46 | -0.80 | -5.90 | 5.1 | +0.7 | 76 | 0 |
| East Gulf..... | 74.5 | +2.2 | +6.7 | 5.04 | +1.50 | -7.00 | 3.6 | -1.1 | 67 | -4 |
| West Gulf..... | 73.4 | +0.5 | +8.7 | 4.27 | +0.60 | -1.80 | 4.5 | -0.3 | 73 | -2 |
| Ohio Valley and Tennessee..... | 66.7 | +1.5 | +1.8 | 3.93 | +0.20 | -0.90 | 5.4 | +0.4 | 66 | -3 |
| Lower Lakes..... | 57.0 | -0.5 | -2.9 | 4.14 | +1.00 | +1.60 | 5.9 | +0.5 | 71 | 0 |
| Upper Lakes..... | 52.6 | -0.1 | -2.7 | 3.61 | +0.30 | +1.20 | 6.1 | +0.6 | 70 | -2 |
| North Dakota..... | 51.7 | -2.6 | -13.5 | 2.20 | -0.30 | +0.20 | 5.3 | -0.2 | 62 | 0 |
| Upper Mississippi Valley..... | 62.0 | -0.1 | +0.4 | 4.49 | +0.30 | +0.90 | 5.8 | +0.5 | 67 | -1 |
| Missouri Valley..... | 61.7 | -0.3 | +0.2 | 4.18 | 0.00 | -2.80 | 4.8 | -0.3 | 65 | 0 |
| Northern slope..... | 49.3 | -3.7 | -7.5 | 2.30 | -0.10 | -0.80 | 5.5 | 0.0 | 60 | +2 |
| Middle slope..... | 62.8 | -0.2 | +1.6 | 2.33 | -1.10 | -1.90 | 4.4 | -0.5 | 58 | -3 |
| Southern slope..... | 71.4 | +0.8 | +13.3 | 1.54 | -1.20 | -2.00 | 3.1 | -1.3 | 49 | -8 |
| Southern Plateau..... | 64.5 | -1.4 | +2.4 | 0.10 | -0.20 | +1.60 | 1.6 | -1.1 | 31 | -1 |
| Middle Plateau..... | 53.5 | -3.0 | +1.9 | 0.50 | -0.60 | 0.00 | 3.4 | -0.7 | 38 | -8 |
| Northern Plateau..... | 51.9 | -5.0 | -7.7 | 1.50 | -1.20 | +0.90 | 6.0 | +0.9 | 58 | +2 |
| North Pacific..... | 51.6 | -2.3 | -6.2 | 1.81 | -0.40 | -5.10 | 6.3 | 0.0 | 74 | -2 |
| Middle Pacific..... | 56.1 | -1.5 | +3.3 | 0.38 | -0.90 | +0.10 | 2.9 | -1.1 | 62 | -9 |
| South Pacific..... | 60.7 | -0.9 | +3.9 | 0.02 | -0.60 | +4.60 | 2.8 | -1.3 | 65 | -4 |

WEATHER CONDITIONS ON THE NORTH ATLANTIC DURING MAY, 1915.

The data presented are for May, 1915, and comparison and study of the same should be in connection with those appearing in the REVIEW for that month. Chart IX (XLIV-63) herewith shows for May, 1915, the averages of pressure, temperature, and the prevailing direction of the wind at 7 a. m., 75th Meridian time, together with the locations and courses of the more severe storms of the month.

PRESSURE.

The distribution of the average pressure for the month, as shown on Chart IX, differed in many respects from the normal. The Azores HIGH, with a crest of 30.1 inches, was near its usual position and extended from the 22d to the 29th parallels and the 29th to the 58th meridians. No traces of the Icelandic LOW could be seen, and a HIGH with a crest of 30.1 inches was central near latitude 60° N., longitude 5° W. A LOW of 29.7 inches and of small extent was located with its center about three degrees east of St. Johns, Newfoundland, while there was no sign of the usual continental HIGH over the eastern districts of the United States. The pressure over the position normally occupied by this area was remarkably uniform, ranging from 29.9 to 30 inches. One of the most unusual features of the barometric distribution was the high pressure that prevailed over the northern portion of the ocean during the greater part of the month. The lowest individual barometric reading during the month in the region between the 60th and 65th parallels and the 15th and 20th meridians was 29.6 inches, occurring on May 3 and again on the 4th, while readings as high as 30.57 inches occurred in this region on May 8, and the average readings for the month in seven 5-degree squares varied from 30.04 to 30.11 inches.

The low pressure near St. Johns, Newfoundland, mentioned above, was remarkable for its tenacity, as it existed in that vicinity on 17 days during the month, the barometric readings ranging from 29.26 to 30.06 inches. In the extreme northeast portion of the ocean, the pressure was below the monthly mean on the first two days and from the 11th to the 17th, while it was above on the 9th and 10th and from the 18th to the 26th. In the waters adjacent to the American coast and in the vicinity of the Azores HIGH, the pressure was comparatively uniform, while in mid-ocean, north of the 40th parallel, it was considerably lower in the first two decades of the month than in the last.

GALES.

In the two 5-degree squares between the 40th and 45th parallels and the 35th and 45th meridians, the number of gales during the month was slightly above the normal, while in all other parts of the ocean the conditions were reversed, and along the northern sailing routes, winds of gale force were comparatively rare, as in the 5-degree square where the maximum number was reported they occurred on only three days.

Only two storm tracks for the month are shown on Chart IX (XLIV-63), although there were a number of disturbances reported whose tracks were either too irregular to plot accurately, or the positions of the centers indeterminate on account of lack of observations.

On May 2, a LOW of comparatively limited area was central near latitude 42° N., longitude 44° W., the lowest